

## ABSTRACT

**(0065)** A grid-connected power system includes a primary power source, a back-up power source, a DC/AC inverter and a DC/DC converter. Direct current from the primary power source is supplied to the DC/AC inverter to obtain an alternating current output supplied to a utility grid when power from the utility grid is available to power a load. The output of the inverter is supplied to a selected portion of the load when power from the utility grid is unavailable to the load. Direct current from the back-up power source is supplied to the inverter through a DC/DC converter when power from the utility grid is unavailable to the load. The DC/DC converter converts the voltage of direct current from the back-up power source to direct current having a voltage compatible with the voltage of the primary power source and the inverter. The back-up power source may be charged by the primary power source or by the utility grid. Methods of providing back-up power include converting the voltage of direct current from a back-up power source to direct current of converted voltage and supplying the direct current of converted voltage to a DC/AC inverter.